



Stella STEM's activity pack





Let's go full steam on STEM, what do you say! Chug chug chug choo choo... who wants to join the train and be the next engineer to build something cool to go full speed, or fly super high to Mars? Maybe swim to the deepest ocean to conduct experiments, or wear the safety goggles and brew something fun like Hermione from Harry Potter. Maybe notice how math plays a role beyond the calculations on paper and not

to forget, maybe just sit back, relax and watch the sunset, or the night sky and see the magic of science happening all around us – all the time!

Did you know there are some incredible girls who are the reason behind discovering the magic of science? They are considered the superstars, the science fairies, and powerful heroes and guess what, you can be one too – but only if you put your mind to it!

I hope you enjoy participating in the Stella STEM pack and have just as much fun as I did when I was a little girl. I went on to study engineering and got my master's degree in computer engineering – because I loved to study the magic of science like wireless technology, understanding how plants grow, how planets revolve, and so much more.

Tezeswari Nettimi
U.S. Federal Women's Forum President



Hi girls!

Did you know there was a whole month dedicated to celebrating the accomplishments of women? Women's History Month is celebrated each year in March and is a time for reflection and appreciation of the contributions of women. How cool is that?! In this packet, you will learn about some extraordinary women and their contributions to STEM—Science, Technology, Engineering and Math.

In the U.S., there are more jobs in STEM than there are qualified people to do those jobs. Do you enjoy solving problems and trying to make things better? If so, STEM is for you! STEM is used to help solve every day, real world problems such as curbing world hunger, providing fresh water and creating “green” energy, to name a few.

As you complete the enclosed activities, I encourage you to think about your future and the footprint you want to leave on the world. You are smart. You are strong. You can make a difference.

Ashton Parmer
U.S. CSG Women's Forum President



Hi Girls!

My name is Interstella,
but you can call me **Stella STEM!**

I love all things STEM! STEM stands for Science, Technology, Engineering and Math. These are the subjects that help our world develop and make new things for you and me.

Throughout history, there have been some super cool women leading the way in STEM. They have been inspirational in their work but also in their quest to ensure women had the same opportunities as men in STEM.

I'm on a mission to prove that STEM isn't just for boys! I will be journeying through history to look at some of the countless numbers of inspirational American women in STEM – come and join me!

Let's discover together and find out more on these role models and how they can inspire us. Who knows, maybe one day you'll be in a book just like this one!



Women can wear pants too. Can't we?

Of course we can. No one would ever tell a woman now that they can't wear pants, but in the 1930s a woman in pants was considered scandalous. That didn't stop Dr. Barbara McClintock though, who worked at the University of Missouri. She was excluded from meetings with the other faculty members and given little support for her work. After finding out the university would fire her if she ever got married, Barbara decided enough was enough. She quit and found a job elsewhere. She went on to win a Nobel prize for her work on genes.

That's considered the highest award a scientist can get!



And back further still, in the mid to late 1800s, at a time when a woman's role was thought to be running the home and having babies, Emily Roebling took on her husband's role as chief engineer after he became extremely sick and could not complete Brooklyn Bridge, the longest suspension bridge in the world. Roebling worked to see the bridge completed as supervisor and project manager. A woman engineer at the time was almost unheard of but Roebling stands as a testament that women have a powerful place in all areas of STEM.



Much credit for the work accomplished by American women inventors in the past was claimed and published by men. In fact, at one time women were not allowed to own property in their own name in many states, which meant they could not own patents. However, this did not stop them! Great progress has been made towards bringing their contributions to the forefront. Many women like Alice Ball have been able to take their rightful place in American history and have their talents recognized. Today, women continue to solve an untold number of the world's most complicated math and engineering problems. For example, Edith Clarke patented the "Clarke Calculator," a graphical device that was used to help electrical engineers understand power lines.



Throughout history, women have faced opposition and adversity, however they didn't let that stop them from doing incredible things. So let's not stop now. We are calling on you to follow in the footsteps of the incredible women who came before you and be incredible too.

Are you up for it? Of course you are!



Inspirational women in science



Stephanie Kwolek

1923 – 2014

Known for: Invented Kevlar®

Kwolek's invention was bullet-proof!

She wanted to be a doctor, but she needed to earn money to pay for school. She decided to get a temporary job. Due to the worker shortage from men going to fight in World War II, she was able to get a job DuPont Chemical Company. She liked the job so much she stayed on permanently!

She discovered a cloudy, crystalline solution (a waste product that was normally thrown away after an experiment), and convinced a technician to test it for her. They found the fiber to be five times stronger than steel! This fiber later became known as Kevlar®, which is used in bullet-proof vests. A new field of polymer chemistry quickly arose due to Kwolek's discovery of Kevlar®.



Alice Ball

1892 – 1916

Known for: Developed the first useful treatment for leprosy

She was both the first woman and the first African-American to graduate from the University of Hawaii, where she got a Master of Science degree in chemistry.

She went on to work at this university as a chemistry instructor when she was only 23 years old. In this role, she researched treatments for an illness called leprosy. Sadly, Ball died due to a research related accident aged just 24, before she was able to publish her research findings. Upon her death, her findings were taken by the head of the university, who claimed the findings as his own. He published the findings under his own name, and Ball's credit for the papers wasn't given for many years.

Science is all around us

Science helps us to understand the natural world through things such as experiments and observations.

There are many different types of science, including:

- Biology (the study of life)
- Physics (the study of matter and energy)
- Chemistry (the study of the properties of matter and how matter interacts with energy)

Have you ever wondered why the sky is blue, why steam is released from a boiling kettle, or how a cake rises in the oven? Science answers all of these questions and more!



Have you ever seen a pH scale?

A pH scale ranges from 0-14 and tells us how acidic or alkaline a substance is.

- 0-6 on the pH scale is acidic

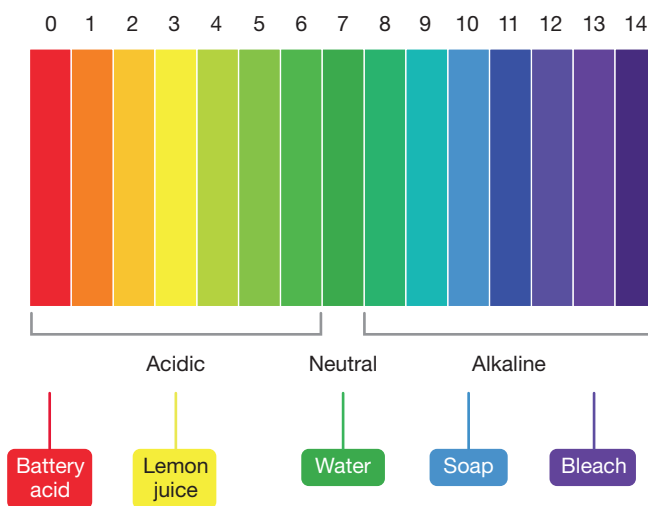
The lower the number, the more acidic the substance is.

- 8-14 on the pH scale is alkali

The higher the number, the more alkaline the substance is.

- 7 is neutral (e.g. water)

So, to recap: anything below 7 is acidic, anything above 7 is alkaline and 7 is neutral.



Are these substances acid, alkali or neutral?

Color in the pH scale and draw a line from the substance to the correct place on the pH scale.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



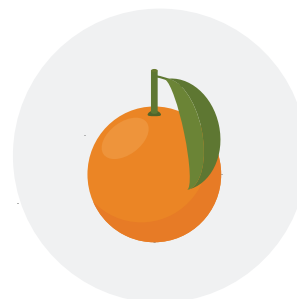
Lemon juice (pH 2.5)



Bleach (pH 13)



Water (pH 7)



An orange (pH 3.8)

Is lemon juice acidic or alkaline?

If a liquid has a pH of 8, is it a strong acid, a weak acid, neutral, a weak alkali or a strong alkali?

Inspirational women in science



Dr. Sylvia Earle

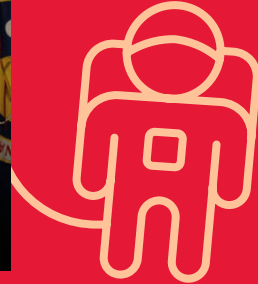
Born in 1935

Known for: First female chief scientist of the U.S. National Oceanic and Atmospheric Administration (NOAA)

Dr. Earle was so good at her work with the environment that Time Magazine called her 1998 “Hero of the Planet!”

As a world renowned American oceanographer and explorer, Dr. Earle is known for her research on marine algae and raising awareness of the threats of overfishing and pollution of the world’s oceans.

She is a pioneer in the use of the modern self-contained breathing apparatus (SCUBA) gear and the development of deep-sea submersibles. She even held the world record for the deepest untethered dive!



Dr. Peggy A. Whitson

Born in 1960

Known for: First female commander of the International Space Station (ISS)

Dr. Whitson has spent more time in space in a row than any other American, over 665 days!

Upon graduation, Dr. Whitson worked for NASA. This work included joint efforts between American and Russian scientists.

In 2008, her second trip to space, she traveled as the first female commander of the ISS. She is also the first ISS science officer to perform a spacewalk and deploy a science payload. She eventually became the first woman and civilian to hold the position of NASA’s Chief of the Astronaut Office.

Inspirational women in science



Dr. Cecilia Payne-Gaposchkin

1900 – 1979

Known for: Theorizing that stars were mostly made from hydrogen and helium

Dr. Payne-Gaposchkin was a star-gazing genius.

She studied at Cambridge University, but was not awarded a degree because she was a woman. She discovered that hydrogen was the most common element, and that stars were balls of gas made mostly from hydrogen and helium. This theory was rejected because it didn't match what people believed at the time. However, it was later proved correct and re-published by a man who claimed the theory as his own and took the credit.

In 1925 she became the first person to earn a doctorate in astronomy from Radcliffe College of Harvard University.

The work of her and her husband, astrophysicist Sergie Gaposchkin, changed people's understanding of the universe.



Christa McAuliffe

Born 1948 - 1986

Known for: Being the first private citizen passenger in the history of space flight.

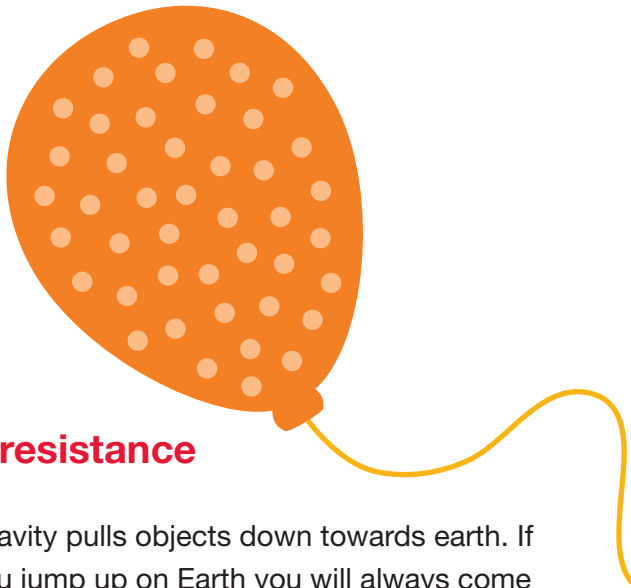
McAuliffe was the first and only teacher selected to go into space as part of NASA's "Teacher in Space Project."

Aspiring to be part of the space shuttle program, McAuliffe applied to President Ronald Reagan and NASA's Teacher in Space Program in 1985 and was selected from over 11,000 applicants!

After a year of intense NASA training, her shuttle mission, the STS-51L, was to be her first shuttle mission to space. On January 28, 1986, the Space Shuttle Challenger exploded within two minutes of launch and all seven crew members died including McAuliffe.

What is physics?

Physics is a scientific subject that studies matter. This includes how matter moves and how it interacts with energy and forces.



Air resistance

- Gravity pulls objects down towards earth. If you jump up on Earth you will always come back down. That's gravity. Without gravity we would all float away.
- Air resistance slows down a falling object because the tiny particles in the air are getting pushed out of the way, and they push back.
- The larger the object, the more air particles it will need to move out of the way. Therefore, the greater the air resistance against it will be.
- So, if you have two objects of the same weight but different sizes, they will fall at different speeds.

What is air?

Air is a type of matter. It is a gas. It looks like it's nothing, but it's actually made up of lots and lots of tiny, invisible particles (too small to see!).

Think of a balloon that you fill with air. As you push more air into the balloon it expands, and if you tie it shut, it remains expanded. This is because the balloon is full of tiny invisible particles that would normally be spread out in the air. However, as you have forced them into a confined space, they are more densely populated than if they were in the air.

Why don't you test this theory by getting two pieces of paper (one big piece and one small piece) and drop them from the same height. See which one hits the ground first!

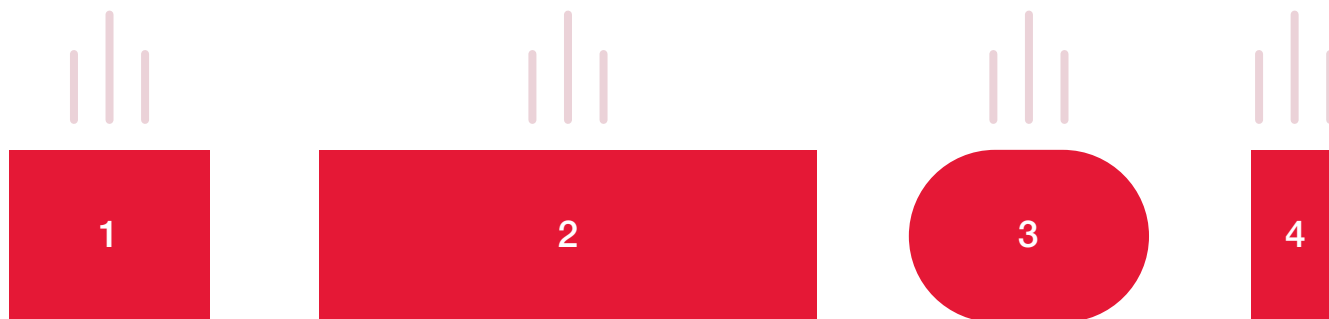
Can you predict the outcome?

Physicists conduct experiments to test a hypothesis (something we believe to be true, which needs further investigation).

Can you hypothesize which objects will have the most air resistance, and which will have the least?

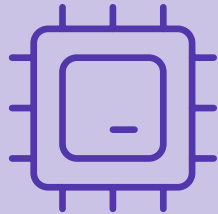
Remember, we know that the larger the object = the more air particles it will need to move out of the way = the greater the air resistance against it.

Can you design a simple experiment to test your hypothesis?



Order the objects from least air resistance acting against it, to greatest air resistance.
Write the number of the objects on the dotted lines.

Inspirational women in tech



Edith Clarke

1883 – 1959

Known for: The first woman to be employed as an electrical engineer in the U.S.

Clarke used her skills to help build the Hoover Dam.

She took a summer job as a computer assistant, and was so interested in her work that she stayed on to train and direct a group of human computers (people who performed complicated mathematical problems).

Her most famous contribution was the “Clarke Calculator” in 1921, a graphical device that simplified the equations electrical engineers used to understand power lines. It was patented in 1925. She helped build the Hoover Dam, contributing her electrical expertise to develop and install the turbines that generate hydropower there to this day.



Annie Easley

1933 – 2011

Known for: Being a computer scientist for NASA

Easley was a trailblazer in the tech industry.

Before modern computers mathematically-talented individuals would calculate complex mathematical formulas by hand. They were called “human computers.”

She helped pave the way for women’s rights at the center where she worked, in both formal and informal ways. Notably, she and her room supervisor agreed to come into work wearing pants, like men. This made a statement on *what women did*, rather than *what they wore*.

Inspirational women in tech



Dr. Shirley Ann Jackson

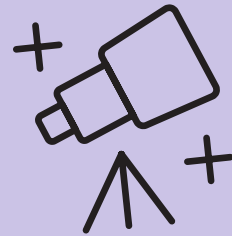
Born in 1946

Known for: Breakthrough research in telecommunications

This highly esteemed woman is the reason we can enjoy solar cells, fiber optic cables, caller ID and call waiting!

Dr. Jackson is the first African-American woman to earn a Ph.D from MIT, to be elected to the National Academy of Engineering, to be appointed chair of the U.S. Nuclear Regulatory Commission, and to be president of Rensselaer Polytechnic Institute!

Her research on electrons at Bell Laboratories led to the development of the technology that transmits power for computers and the telecommunications industry using software programs.



Dr. Katie Bouman

Born in 1989

Known for: Creating the first image of a black hole

Bouman and her team captured the first image of a black hole!

She led the development of the computer program that made the breakthrough image possible, captured in 2019.

Before this, no image had ever been taken of a black hole, and it is thought that this may revolutionize our understanding of the universe.

Do computers talk?

Do computers talk?

Computers have their own language, just like us. Computers don't understand English, they only understand code, so we have to communicate with them in code.

Ciphers

Ciphers are a way of retrieving a hidden message from within another message.

The cipher tells you where in the message to look, or what you need to do to get to the hidden message. A cipher could be a set of coordinates, each one to a different letter. Once you have all the letters they spell out a new message.



Using the coordinates

(1,7) (2,7) (4,7) (1,4) (3,4) (2,7) (5,4)
(3,6)

I space m e t space a n

(2,7) (5,4) (1,2) (1,5) (1,4) (3,6)

space a l i e n

I met an alien

7	I		a	m		s	o
6	h	u	n	g	r	y	
5	i		c	o	u	l	d
4	e	a	t		a		
3	v	e	r	y			
2	l	a	r	g	e		
1	b	u	r	g	e	r	
	1	2	3	4	5	6	7

Can you talk in code?

Find the hidden message

Can you use the following cipher to find the hidden message in the text?

Cipher: (1,5) (2,4) (3,3) (4,2) (5,1)

H	A	P	P	Y
E	E	L	S	
A	L	L		
S	A	I	L	
T	O		H	O
			M	E

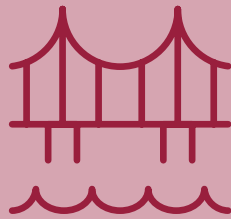
Break the code to answer the questions!

- Sophie is the oldest.
- Clare is 3 years younger than Sophie.
- Joanna is 8 and the second youngest.
- Marie is 1 year younger than Joanna and 4 years younger than Sophie.

Q. How old is Sophie?

Q. Which two girls are the same age?

Inspirational women in engineering



Emily Roebling

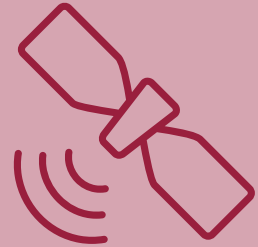
1843 – 1903

Known for: Completing the construction of the Brooklyn Bridge

Roebling built bridges (literally!) for women in STEM.

Her husband was the chief engineer on the construction project for the Brooklyn Bridge, the longest suspension bridge in the world. However, after he developed a debilitating illness she took over much of the chief engineer duties, including day-to-day supervision and project management.

She was the first person to cross the bridge by carriage and today the bridge is marked with a plaque dedicated to her memory.



Scarlin Hernandez

Born in 1991

Known for: Spacecraft engineer and mission lead for NASA's signature space mission.

This amazing woman tests the ground systems that will command and control the James Webb Space Telescope to be launched into space in 2021!

Hernandez moved to America from the Dominican Republic when she was 4 years old. She graduated in computer engineering but found she was more interested in Astronautical Engineering.

Today, her work on the James Webb Space Telescope is planned to succeed NASA's Hubble Telescope and launched on December 25, 2021. This infrared telescope will discover new planets and the some of the first stars in our universe.

Engineering

Engineers solve problems with their inventions. They love figuring out how and why things work. But before things are built (or created), they need to be planned out, which is called engineering. Do you like engineering things?

Engineers are creative thinkers, who work in different industries, depending on their area of speciality. Some examples of engineers are: computer engineers, electrical engineers, civil engineers, aerospace engineers and mechanical engineers.

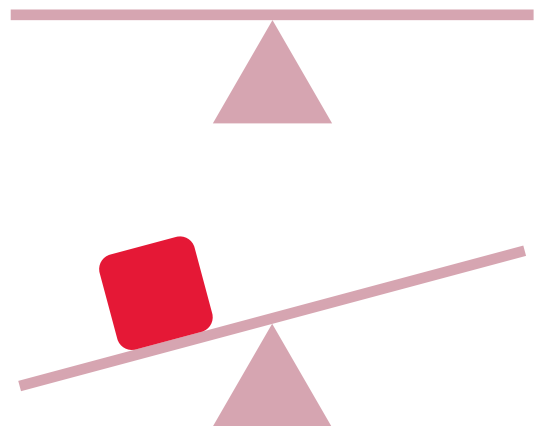
What type of engineer sounds most interesting to you and why?



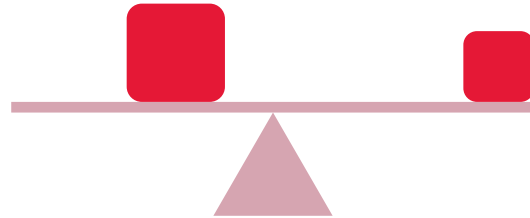
Engineers need to understand how things interact with each other in order to invent new things or improve existing things.

In this experiment, engineers would study how force (the weights) and distance (how far the weights are from the central pivot) affects the movement of the scale. When there are no weights on the scale it is perfectly balanced and remains level.

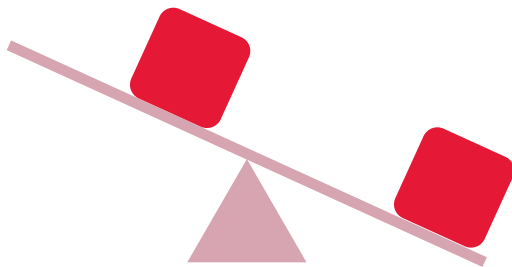
When a heavy weight is placed on one side of the scale, the scale tips in that direction, making it unbalanced.



If a lighter weight is placed on the other side of the scale to the heavy weight, but placed further away from the pivot, the scale can be balanced, even though the weight on the right is lighter than the one on the left.

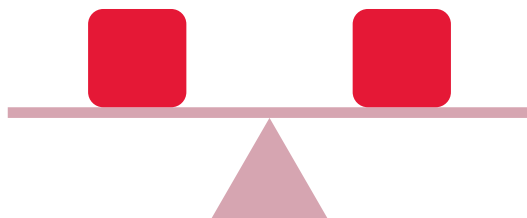
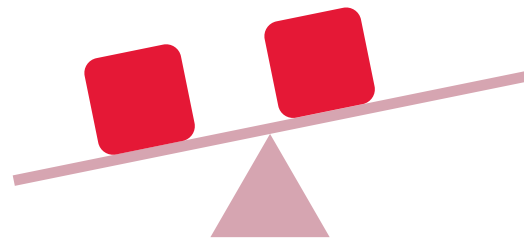


You can test this theory on a see-saw in the playground. How does the see-saw move when you get on? How does the see-saw move when your grown-up gets on the other side and why?



If an object of the same weight is placed on the scale, but further from the pivot than the first object, then the scale will tip down on the side of the new object even though they are the same weight.

If the new object, of the same weight, is placed on the scales, but closer to the pivot than the original object, then the scales will tip down on the side of the original object.



If the two objects of the same weight are placed the same distance from the pivot on both sides, the scale will be balanced.

Can you make the scales balance?

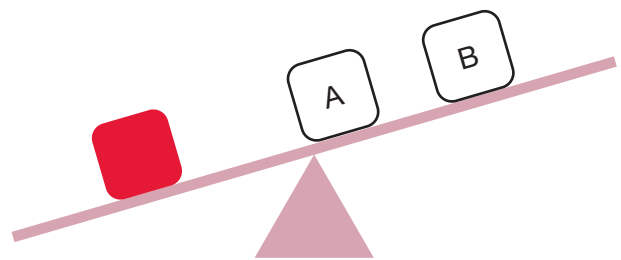
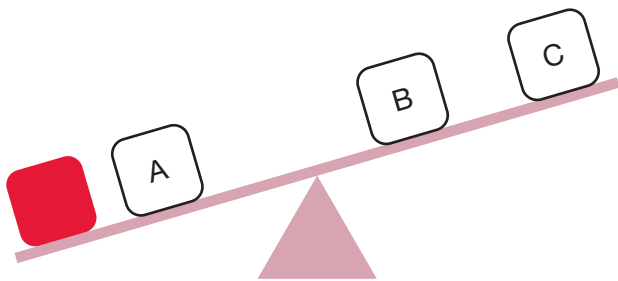
1. On the scale below, which position should you place the heavier weight in order to balance the scale?

- 2a. Using the scale below, in which position would you place the smaller weight in order to balance the scale?



- 2b. In which position would you place the larger weight to balance the scale?





Inspirational women in math



Katherine Johnson

1918 – 2020

Known for: Mathematician for NASA

Johnson calculated the path that put the first American astronaut on the moon!

She started high school when she was only 10 years old, and graduated when she was 14 due to her skills with math. After graduating from college, age 18, she went to work for NACA (now known as NASA), with a group of African-American women whose jobs were to perform complicated mathematical computations for the engineers. These women were human computers.

She was the first Black female to be given credit for being an author on a research report. She was part of the team that calculated where and when to launch Apollo 11 (the spacecraft that put the first person on the moon).



Dr. Grace Hopper

1906 - 1992

Known for: Computer Scientist and Mathematician for US Navy

Dr. Hopper invented the first computer compiler that taught computers how to “talk” with humans!

As a computer scientist, she thought it would be easier for people to work with computers if only we could speak a common language. When she presented the idea of creating a human-to-computer translator language (a compiler) to her peers, many did not believe it was possible and that computers could only do simple math.

In 1952, she co-invented the first universal programming language used in Business and Government, COBOL. This new computer language made programming computers accessible to more people. Grace achieved the rank of Rear Admiral by special Presidential appointment and was nicknamed “Amazing Grace.”

Inspirational women in math



Dr. Julia Robinson

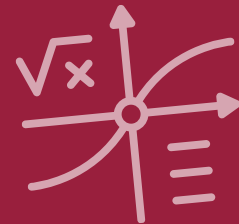
1919 – 1985

Known for: Solving various mathematical problems

Dr. Robinson was an award-winning, math genius!

As a child, Dr. Robinson got sick with both scarlet fever and then rheumatic fever. By the time she was better, she had missed two years of school. In only one year, working with a tutor for three mornings a week, she was able to cover four years worth of school work! She returned to school and by her final year she was the only girl in her math and physics classes. She did very well and received awards in both subjects, as well as the Bausch-Lomb award for the Best Science Pupil.

She later worked as a mathematician in a university and published a number of papers that aided in the solution of a number of problems.



Hedy Lamarr

1914 – 2000

Known for: Actress, Engineer, and Mathematician

Lamarr's work provided the foundation for our GPS, WiFi, and Bluetooth technologies!

This Austrian-American actress was not only talented on the big screen but also as an engineer and mathematician. During World War II she wanted to contribute to the war effort. Working along with George Antheil, who was a musician and composer, Lamarr developed a form of “frequency hopping,” which would encrypt torpedo control signals, preventing enemies from jamming them and sending the torpedoes off course. She and Antheil patented the torpedo technology but it went unused for over 20 years! Today, her spread-spectrum technology work has provided the needed foundation all the portable devices we use every day. She was inducted into the National Inventors Hall of Fame in 2014.

Math

Math is all around us. We use math to tell the time, to play games, to build things and do all sorts of different work.

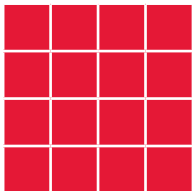
Squaring and square root are the opposite of each other.

Squaring

A number squared is just the number multiplied by itself.

$$4^2 = 4 \times 4 = 16$$

So we say, 4 squared equals 16



Think of squaring a number as making a square with a length and height of your number. So 4 squared is a 4 by 4 square. If you count the squares you have your answer.

A civil engineer would need to calculate square roots when they build roads coming off a hillside.



Square Root

The square root of a number is the number that when multiplied by itself equals the original number.

$$\sqrt{16} = 4$$

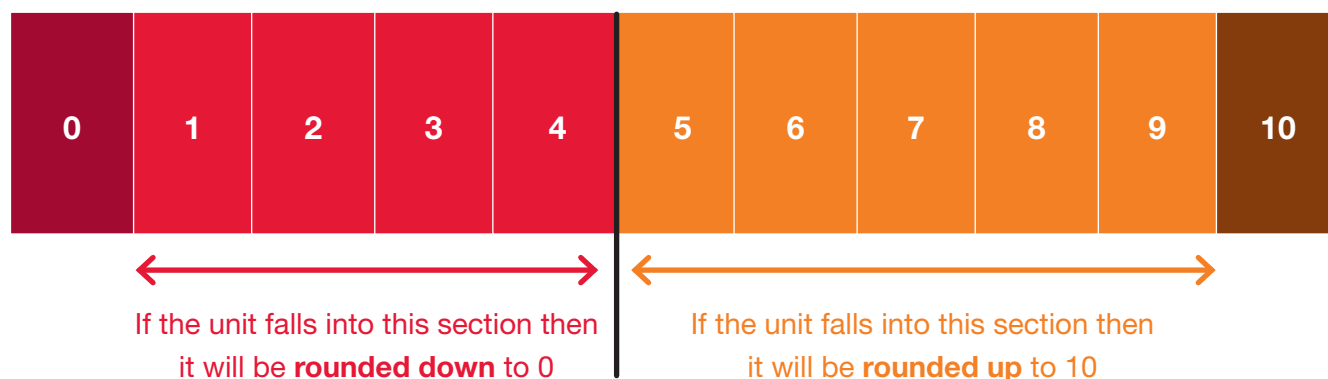
So we say the square root of 16 is 4



To get the square root of a number, make a square and figure out what length and height the square would need to be so that the total area of the square equals your number (remember that your length and height need to be the same).

Rounding

Rounding is a term we use in math to make numbers simpler and easier to use.



Here are some examples of how we round numbers to the nearest 10:

0	←	3		
		9	→	10
10	←	11		
		17	→	20
20	←	24		
		28	→	30
100	←	101		
		256	→	260

You can apply this to rounding with tens, hundreds, even thousands!

Can you help to solve these math problems?

What is the square root of 9?

Tip: make these 9 squares into one larger square. Remember a square has equal sides.



**Can you help me round these numbers to the nearest ten?
Then, circle “rounds down to” if you rounded the number down and “rounds up to” if you rounded the number up.**

I have done the first one for you.

13 rounds down to / rounds up to 10

47 rounds down to / rounds up to _____

102 rounds down to / rounds up to _____

81 rounds down to / rounds up to _____

31 rounds down to / rounds up to _____

79 rounds down to / rounds up to _____

56 rounds down to / rounds up to _____

STEM Wordsearch

S Q H N U R W H T C G I F D C V Z V C E K D V B S
F H D I Z T R D C R Z J N L C F B H L I V F E R H
L K E K R Q Y A A N O S N I B O R A I L U J H K I
D X J H U I Z C M A N N I E E A S L E Y K K A N R
T J A C E P E W P A V X V Y D O D Q O A X T E U L
M G M S Y H D D B K L O K Q X I Y N Y B I O Q Y E
V I Q O O E N D Q A P Y Q U S S T E D E C G E O Y
T Y X P P I A L N T W W D E M Q R H B M E M X D A
E F P A E N N S U H A Y L E N X Y O C F X W L C N
M E K G G K R Z J E C B A M H J U K F L D L T T N
R H M E G W E U W R K W Z H W M C I H P A J P A J
A G M N Y M H U M I O P H W A A L L Q G J R N D A
K A L Y W X N K A N T C T N R U L A N P X I K Q C
R Q B A H Z I X Z E O E L R A E A I V L Y S Y E K
N V Y P I E L I U J B R T C I O L J C D O L S R S
K Z K A T G R K O O H E M P D B Y X Q E E I H G O
Q L Y I S Z A H I H C A N X E L M B F O B K U G N
O U D L O Q C C A N T R W O C C B T P U W A B V D
J W B I N W S S V S N S R I G Y K S M W N B L A V
E V E C M D T Q I O Y Y J S I A B I I I B C I L W
B D J E Q L S R A N L O C D C P N N A F W N O U K
Q F H C G Y H X V I S T E P H A N I E K W O L E K
U L K K B C I Z M J Y Z E W N Q N L X E E X V K T
U I Z S Z H N E H B P Q B G R P J Q S N B F P I B
Z Y T G Y F P V R B Y R R S W Q R S H Z L M Y B P

Katherine Johnson

Grace Hopper

Julia Robinson

Hedy Lamarr

Scarlin Hernandez

Emily Roebling

Annie Easley

Edith Clarke

Shirley Ann Jackson

Katie Bouman

Sylvia Earle

Cecilia Payne-Gaposchkin

Christa McAuliffe

Stephanie Kwolek

Alice Ball

Peggy Whitson



Well girls, it looks like we've reached the end of our journey through STEM. I had lots of fun – I hope you did too!

STEM is the way our world is created from the imagination to solve problems that sometimes we don't even know exist. It is all around us! The creativity, bravery and courage of women like you in STEM have reinvented our world! Can you imagine not having your cell phone or TV streaming? Without women taking their place in STEM, we would never have Bluetooth®, WiFi, fiber optic cables and the caller ID technology we use for our cell phones, televisions, and Internet service we use every day. This technology including solar cells makes it possible for us to communicate to friends around the world with satellites, heat our homes, explore planets like Mars and so much more.

If you're interested in learning more about women in STEM, there are loads of great books to read and women to learn about. Ask your teachers and parents about these, and see what else you can learn!



U.S.



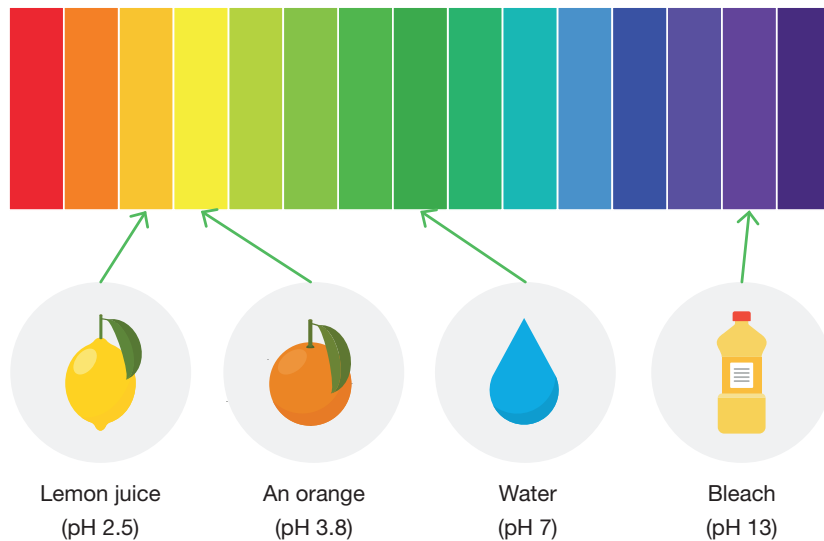
FEDERAL



CGI

Answers

Page 8



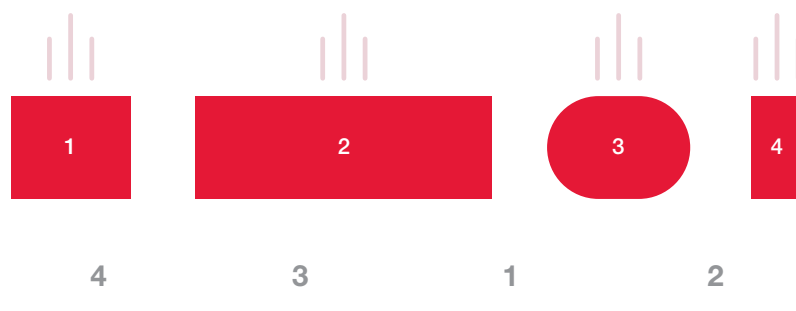
Is lemon juice acidic or alkaline?

Alkaline

If a liquid has a pH of 8 is it a strong acid, a weak acid, neutral, a weak alkali or a strong alkali?

Weak alkali

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Did you break the code?

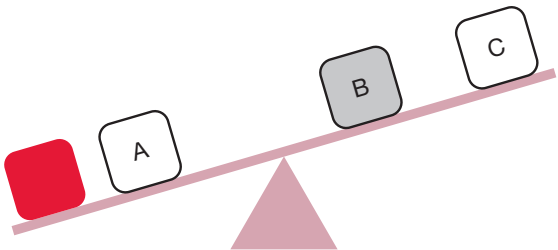
Sophie is 11

Clare and Joanna are both 8

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1. On the scale below, which position should you place the heavier weight in order to balance the scale?

B



2a. Using the scale below, in which position would you place the smaller weight in order to balance the scale?

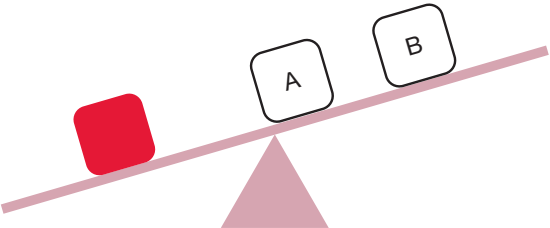


B

2b. In which position would you place the larger weight to balance the scale?



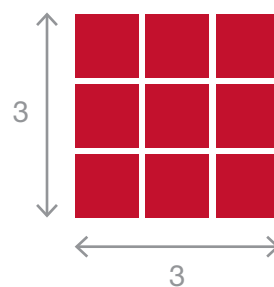
A



Answers

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Find the square root of nine by making these nine squares into one larger square:



Can you help me round these numbers to the nearest ten?

13 rounds down to 10

47 rounds up to 50

102 rounds down to 100

81 rounds down to 80

31 rounds down to 30

79 rounds up to 80

56 rounds up to 60

Answers

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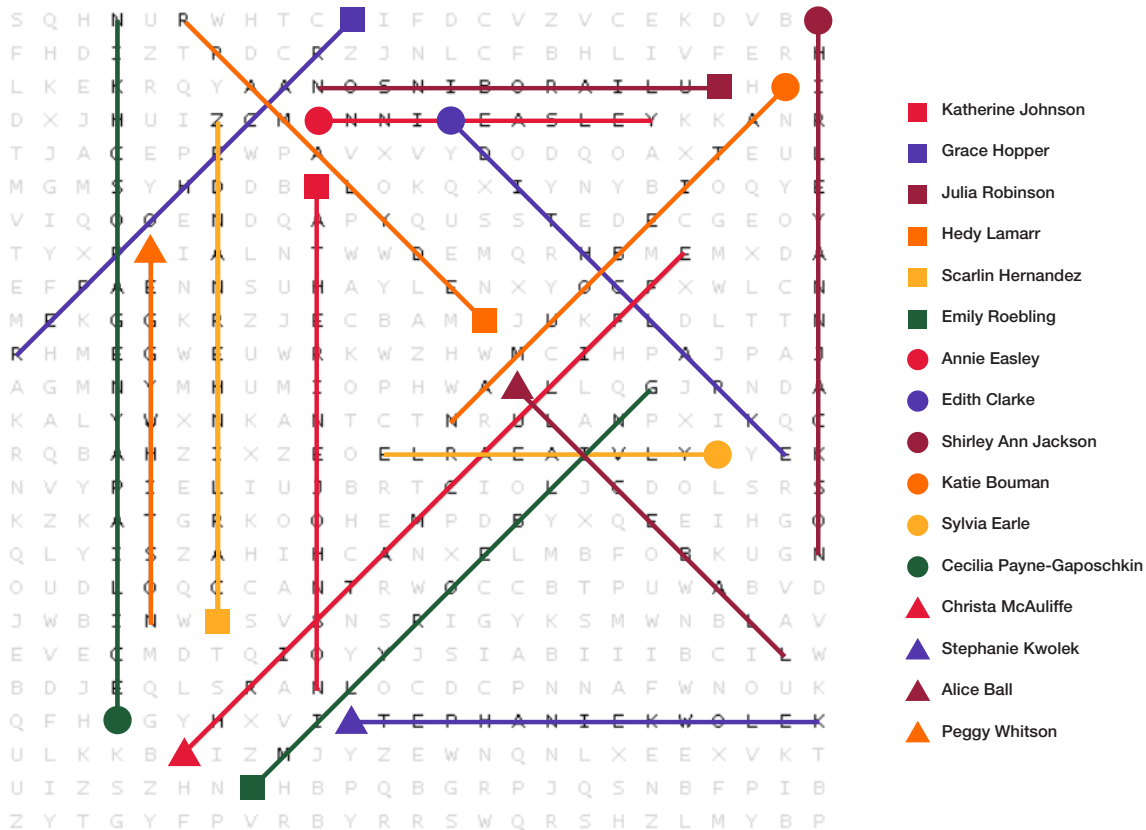


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Katie Bouman

Courtesy of Katie Bouman

Julia Robinson

https://upload.wikimedia.org/wikipedia/commons/1/10/Julia_Robinson_1975.jpg

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Dr. Shirley Ann Jackson

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Scarlin Hernandez

Image Credit: "Hispanic Network Magazine Honors NASA Goddard Engineer Scarlin Hernandez – Office of Diversity and Equal Opportunity." Blogs.Nasa.Gov, blogs.nasa.gov/odeo/2018/08/17/hispanic-network-magazine-honors-nasa-goddard-engineer-scarlin-hernandez/. Accessed 23 Apr. 2020.

Dr. Peggy A. Whitson

JSC2009-E-146742 (24 June 2009) --- NASA astronaut Peggy A. Whitson, Expedition 16 commander. Photo credit: NASA

Hedy Lamarr

https://commons.wikimedia.org/wiki/File:Hedy_Lamarr_Publicity_Photo_for_The_Heavenly_Body_1944.jpg

Grace Hopper

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